

## Claims

1. A data segmentation method in a telecommunications system,  
**characterized** by the steps of

5 segmenting larger data units of a higher layer into smaller protocol  
data units (PDU) of a lower layer so that each lower layer PDU comprises one  
or more data segments each containing data from a different one of the upper  
layer data units,

providing the lower layer protocol data units containing two or more  
data segments, with segmentation length information which otherwise indi-  
10 cates the length of the data segments,

indicating with predetermined values of the segmentation length  
information special information about the higher level PDU instead of the  
length of the segment,

transmitting the lower level PDUs to a receiving end,  
15 assembling the segmented higher level data unit at the receiving  
end by means of the segmentation length information.

2. The method as claimed in claim 1, **characterized** by said  
special information including indication whether the higher layer data unit ends  
in the current data segment or continues to the next lower level PDU

20 3. The method as claimed in claim 1 or 2, **characterized** by  
the step of

indicating with a predetermined value of the segmentation length  
information that the rest of the lower level PDU contains padding until the next  
segmentation length information or to the next lower level PDU.

25 4. The method as claimed in claim 1, 2 or 3, **characterized**  
by the step of

indicating with the segmentation length information pointing exactly  
to the end of the lower layer PDU that the higher layer data unit ends.

30 5. The method as claimed in claim 1, 2, 3 or 4, **character-**  
**ized** by the step of

indicating with a predetermined value of the segmentation length  
information that the higher layer data unit carried in the current data segment  
continues to the next lower level PDU.

35 6. The method as claimed in any one of claims 1-5, **charac-**  
**terized** by the step of

providing no segmentation information in a lower layer PDU which

contains data only from a single one of the higher layer data units and contain no padding.

7. The method as claimed in any one of claims 1-6, **characterized** by the step of

- 5 providing segmentation information in a lower layer PDU which contains data only from a single one of the higher layer data units and padding.

8. The method as claimed in any one of claims 1-7, **characterized** by the steps of

- 10 providing each lower level PDU with two or more payload units of a predetermined length, the payload unit being the smallest unit in a retransmission protocol employed,

carrying said segmented higher layer data units in said payload units,

- 15 providing a segmentation indicator field in the beginning of one or more of the payload units in the lower level PDU, if required,

indicating in the header of the lower layer PDU which one or ones, if any, of the payload units contain the segmentation length information.

- 20 **ized** by the step of

providing a segmentation indicator field in the beginning of the first one of the payload units for indicating segmentation information for all segments in the lower level PDU, if required.

- 25 10. A telecommunications system, **characterized** by an upper protocol layer (L3, RRC;LAC) comprising data units (SDU),

a lower protocol layer (L2, RLC) comprising protocol data unit (PDU) having a payload size smaller than said upper layer data units (SDU),

- 30 means segmenting said upper layer data units (SDU) for insertion into smaller protocol data units (PDU) of a lower layer so that each lower layer PDU comprises one or more data segments each containing data from a different one of the upper layer data units (SDU)

means for inserting a segmentation length information (LI) which otherwise indicates the length of the data segments at least in the lower layer

- 35 PDUs containing two or more data segments,

means for giving a predetermined value in the segmentation length

information (LI) in order to provide a receiver with special information about the higher level data unit (SDU) instead of the length of the segment,

- means for assembling the segmented higher level data unit (SDU) from received lower layer PDUs at the receiver by means of the segmentation length information in said PDUs.

11. The system as claimed in claim 10, **characterized** by a predetermined value of the segmentation length information (LI) indicating to the receiver that the rest of the lower level PDU contains padding until the next segmentation length information or to the next lower level PDU.

- 10 12. The system as claimed in claim 10 or 11, **characterized** by a predetermined value of the segmentation length information (LI) indicating to the receiver that the higher layer data unit (SDU) carried in the current data segment continues to the next lower level PDU.

- 15 13. The system as claimed in claim 10, 11 or 12, **characterized** by segmentation length information (LI) pointing exactly to the end of the lower layer PDU being defined to the receiver that the higher layer data unit (SDU) ends.

14. The system as claimed in any one of claims 10-13, **characterized by**

- 20 two or more payload units (PU) of a predetermined length in each lower level PDU with two or more payload units of a predetermined length for carrying said segmented higher layer data units (SDU), the payload unit being the smallest unit in a retransmission protocol employed,

- 25 a segmentation indicator field (LI) in the beginning of one or more of the payload units in the lower level PDU, if required,

at least one indicator (D) in the header of the lower layer PDU for indicating which one or ones, if any, of the payload units (PU) contain the segmentation length information (LI).